



PATENT COOPERATION TREATY



EO/US
PCT/GB00/0211

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing:

28 December 2000 (28.12.00)

International application No.:

PCT/GB00/02179

Applicant's or agent's file reference:

IPD/P2355/WOD

International filing date:

05 June 2000 (05.06.00)

Priority date:

17 June 1999 (17.06.99)

Applicant:

RITCHIE, Andrew, Grahame et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
08 November 2000 (08.11.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BOWDERY, A., O.
Qinetiq Limited
IP Formalities
A4 Bldg., Cody Technology Park
Ively Road, Farnborough
Hampshire GU14 0LX
ROYAUME-UNI

Date of mailing (day/month/year) 05 November 2001 (05.11.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference IPD/P2355/WOD	
International application No. PCT/GB00/02179	International filing date (day/month/year) 05 June 2000 (05.06.00)

1. The following indications appeared on record concerning:

☒ the applicant

 ☐ the inventor

 ☐ the agent

 ☐ the common representative

Name and Address

 THE SECRETARY OF STATE FOR DEFENCE
 Defence Evaluation & Research
 Agency
 A4 Building, Ively Road
 Farnborough
 Hampshire GU14 0LX
 United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person

 ☐ the name

 ☐ the address

 ☐ the nationality

 ☐ the residence

Name and Address

 QINETIQ LIMITED
 85 Buckingham Gate
 London SW1 6TD
 United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

The agent's address has been changed accordingly.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

 The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

R. Chrem

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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REC'D 17 MAY 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IPD/P2355/WOD	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/02179	International filing date (day/month/year) 05/06/2000	Priority date (day/month/year) 17/06/1999
International Patent Classification (IPC) or national classification and IPC C01B17/22		
Applicant THE SECRETARY OF STATE FOR DEFENCE ... et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 08/11/2000	Date of completion of this report 15.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Mayne, J Telephone No. +49 89 2399 8572 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02179

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
Description, pages:

1-4 as originally filed

Claims, No.:

1-10 as originally filed

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02179

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-6, 10
	No: Claims 7-9
Inventive step (IS)	Yes: Claims 1-6, 10
	No: Claims 7-9
Industrial applicability (IA)	Yes: Claims 1-10
	No: Claims

2. Citations and explanations see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02179

Re It m V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 US-4,761,487
- D2 US-4,731,307
- D3 FR-A-2420852
- D4 GB-A-385895
- D5 GB-A-453203

The documents D4 and D5 are cited by the examiner from personal knowledge. A copy of each of the documents was annexed to the written opinion.

Article 33(2) PCT

The documents D1-D3 concern the formation of lithiated iron sulphide for use in a battery. None of these documents discloses reacting a transition metal sulphide with lithium sulphide in molten sulphur.

Claims 1-6 fulfill the requirements of Article 33(2) PCT.

The Applicant has not made plausible that the resulting product would differ in any way from the known lithium transition metal sulphides, e.g. see D1, Fig. 1, which are used in batteries.

The subject matter of independent claim 7 and independent claim 8 is therefore not novel with respect to D1.

Claims 7 and 8 do not fulfill the requirements of Article 33(2) PCT.

Claim 7 is concerned with a **product** which is a lithium transition metal sulphide. Claim 8 is concerned with a **product** which is a battery. Claim 1 is concerned with a **process** for producing a lithium transition metal sulphide. Claims 1 and 7 are in different categories. Claim 7 does not depend on claim 1, but refers back to claim 1.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02179

Claim 8 does not depend on claim 7 but refers back to claim 7 in that the battery of claim 8 comprises an electrode containing a lithium transition metal sulphide according to claim 7.

It is well known to use molten sulphur as a solvent in a chemical reaction for the production of a sulphide, for example in D4 alkali polysulphides are produced and in D5 organic sulphides are produced.

The molten sulphur is stated to be acting as a solvent, see:

- D4, example 1, "sodium sulphide dissolves in the sulphur" the sulphur having previously been melted.
- D5, p. 1, l. 66 onwards, "a solution of the organic sulphide in sulphur consists in maintaining a body of molten sulphur..."

The wording of independent claim 9 does not exclude the possibility that the molten sulphur also acts as a reactant. Claim 9 is not restricted to the production of lithium transition metal sulphide but refers to the production of "a sulphide".

Hence independent claim 9 does not fulfill the requirements of Article 33(2) PCT.

The feature of claim 10 is not seen in the prior art. Claim 10 fulfills the requirements of Article 33(2) PCT.

Article 33(3) PCT

There is no hint to the method of claims 1-6 or the feature of claim 10 in the available prior art. The method according to claim 1 enables the applicant to produce lithium transition metal sulphides more quickly than the diffusion controlled processes known from the prior art, e.g. D1 or D2. A technical problem has therefore been solved.

Claims 1-6 and 10 fulfill the requirements of Article 33(3) PCT.

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference IPD/P2355/WOD	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 02179	International filing date (day/month/year) 05/06/2000	(Earliest) Priority Date (day/month/year) 17/06/1999
Applicant THE SECRETARY OF STATE FOR DEFENCE: DEFENCE E.R.A.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/02179

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C01B17/22 H01M4/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C01B H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 731 307 A (GUIDOTTI RONALD A) 15 March 1988 (1988-03-15) example 1 ---	1
A	FR 2 420 852 A (COMP GENERALE ELECTRICITE) 19 October 1979 (1979-10-19) page 2, line 5 - line 26 ---	1
A	US 4 761 487 A (GODSHALL NED A) 2 August 1988 (1988-08-02) column 9, line 3 - line 19 -----	1

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

6 October 2000

Date of mailing of the international search report

13/10/2000

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Clement, J-P

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/02179

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4731307	A	15-03-1988	NONE	
FR 2420852	A	19-10-1979	CA 1118039 A	09-02-1982
			CH 628466 A	26-02-1982
			DE 2910733 A	27-09-1979
			FR 2485267 A	24-12-1981
			FR 2493607 A	07-05-1982
			GB 2017390 A,B	03-10-1979
			IT 1121451 B	02-04-1986
			JP 54131726 A	13-10-1979
			US 4223078 A	16-09-1980
US 4761487	A	02-08-1988	NONE	